

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

STUDIES IN THE STORAGE OF TURPENTINE GUM FOR DISTILLATION

By

G. P. Shingler, Senior Chemist
Naval Stores Station, Olustee, Fla.
Bureau of Agricultural Chemistry and Engineering
U. S. Department of Agriculture

LIBRARY
RECEIVED
★ MAY 29 1941 ★
U. S. Department of Agriculture

The production of turpentine gum (oleoresin) is a seasonal industry. Since the gum is a product of the living pine and its flow is very greatly influenced by temperature, very little is produced during the winter months. Commercial production starts early in March, builds up to a peak during the hot summer months, and gradually decreases as the weather becomes cooler.

If a gum-processing plant is designed to care for the peak load it will necessarily remain idle or run below its capacity much of the time, and the owner will not receive the proper return on his investment.

The alternative, of course, lies in the construction of a smaller plant, designed to process the average gum supply, thus entailing the storage of gum from the period of peak production to operate the plant during the slack producing season.

In order to determine the effect of storage on the grade and turpentine yield of crude gum, the Naval Stores Station of the Department of Agriculture has carried out a number of preliminary gum-storage tests on a small scale. These tests were limited to storage in wooden barrels and metal drums.

In one of the tests, forty-six barrels of slash pine gum from one dipping of four year-old clay cups were used. All of this gum was thoroughly mixed and a nine-barrel check charge was distilled immediately on the fire still under temperature, fire, and water control. The remaining gum was stored for three months in 20 new wooden and 17 new heavily galvanized dip barrels. The barrels were stored in the open on 4-inch skids, part of them being left uncovered (except during showers). After three months' storage each lot of barrels (which were stored under similar conditions) was distilled on the fire still using the same carefully controlled method of distillation that was used on the check charge. Summary of results obtained are given in table 1.

Table 1. Summary of Results from the Gum Storage Tests with
Covered and Uncovered Wooden and Metal Barrels
(Check charge distilled immediately; others, after 3 months' storage)

Designation of charge	Yields from distillation in fire still		
	Gallons turpentine per 435 lb. standard barrel of gum	Pounds rosin per 435 lb. standard barrel of gum	Rosin grade (visual)
Check	11.7	297	WG
Uncovered wooden bbl.	10.9	298	WG
Uncovered metal bbl.	11.8	293	WG
Covered wooden bbl.	11.3	302	WG
Covered metal bbl.	11.9	299	WG

These tests show that there is apparently no loss in grade of rosin produced when slash pine gum is stored for three months in metal or wooden barrels, covered or uncovered. If there was any darkening of color, it was not enough to change the grade of the rosin. The results also indicate (within the experimental error) that there is little or no loss in yield when gum is stored in metal barrels, but that there is a slight loss when gum is stored in wood.

It is not likely that gum will be stored for any length of time in dip barrels. Nevertheless, these figures will be of interest to prospective users of gum storage tanks, since the chances of loss in grade and yield of gum stored in large tanks will be less than those indicated in table 1, because of the decreased ratio of exposed gum area to gum volume. That is, the percentage of gum exposed to oxidation and evaporation is less in a large tank than in a small dip barrel.

Therefore it can be concluded that turpentine gum can be stored for at least three months in large tanks without serious losses in grade or yield. However, the storage tanks must either be constructed of, or coated with, material resistant to the action of the gum acids.

More detailed information on this and other naval stores problems can be obtained by writing to or visiting the Naval Stores Research Division, Washington, D. C., or the Naval Stores Station, Olustee, Florida.

April, 1941.

